



NEW HAVEN PUBLIC SCHOOLS

## Memorandum

**To:** New Haven Board of Education Finance and Operations Committee  
**From:** Marquélle Middleton  
**Date:** July 29, 2020  
**Re:** MOU School Choice Research Partnership with Princeton University

---

**Executive Summary/ Statement:** (Please provide 1-2 sentences describing the Service – do not leave blank):

This Memorandum of Understanding (MOU) expresses the mutual intent of New Haven Public Schools (hereinafter the “District”) and Adam Kapor and Christopher Neilson of Princeton University and Seth Zimmerman of Yale University (hereinafter the “Researchers”) to assist the School Choice administrators in the implementation of evidence-based best practices based on prior research, and to conduct new research evaluating how school Choice policies in the District affect the satisfaction and achievement of District families and students.

**Amount of Agreement and the Daily, Hourly or per Session Cost:** Non-financial

**Funding Source & Account #:** N/A

**Key Questions:** (Please have someone ready to discuss the details of each question during the Finance & Operations meeting or this proposal might not be advanced for consideration by the full Board of Education):

1. Please describe how this service is strategically aligned to the District Continuous Improvement Plan? Services provided by this contractor will promote greater equity, effectiveness and transparency concerning the school assignment process.
2. What specific need will this contractor address? The contractor will address the effectiveness of the school choice process, best practices and the advancements of process transparency.
3. How was the contractor selected? Quotes? RFP? Sealed Bid or Sole Source? Please describe the selection process including other sources considered and the rationale for selecting this method of selection: The selection of this contractor is based on the previous approved MOU, which officially ended on June 30, 2020.
4. If this is a continuation service, when was the last time the alternatives were sought? N/A
5. What specific skill set does this contractor bring to the project? The contractor will provide high-quality research and data analysis and technical assistance that will undergird smart-marketing tools and transparency. This is particularly critical

6. How does this contractor fit into the project as a whole? (If the contractor is an individual, please attach a copy of their resume): The contractor is deeply invested in school choice processes across the US and in various countries. The contractor is able to assist the district by evaluating the effectiveness of our process and will work to measure parent satisfaction and develop smart marketing tools that will share the depth of all new haven schools. These school finder tools will help parents appropriately match schools to their child's academic interests.
7. Is this a new or continuation service? This is a continuation service.
8. If this is a continuation service has cost increased?
  - a) If yes, by how much? There is no cost incurred to the New Haven Public Schools
  - b) What would an alternative contractor cost? N/A
  - c) Is this a service existing staff could provide? Why or why not? It has been determined that this is not a service existing employees of the New Haven Public Schools are able to provide at this time.
9. Evidence of Effectiveness: How will the contractor's performance be monitored and evaluated? The Office of School Choice & Enrollment will evaluate the effectiveness of this MOU and the contractor's performance. In addition, the contractor will provide substantive evaluation reports as outlined in the attached MOU.
10. If a continuation service, attach a copy of the previous evaluations or archival data demonstrating effectiveness. (If archival data includes lengthy reports, syllabi, training materials, etc., please have a copy available for review) Please review the attached reports.
11. If the service is a professional development program, can the training be provided internally, by district staff? This service is not a professional development program.
  - a) If not, why not? N/A
  - b) How will the output of this Agreement contribute to building internal capabilities? N/A - This service is not a professional development program
12. Why do you believe this Agreement is fiscally sound? There is no cost incurred to the New Haven Public Schools. All services provided under this MOU will be of no cost and will allow the district's school choice process to further advance.
13. What are the implications of not approving this Agreement? Should this MOU not be approved the district will not have the staff capacity and skill set to advance the school choice placement process through research and cost-effective marketing strategies. The Office of School Choice & Enrollment is funded through federal grants with approaching end dates.

# Memorandum of Understanding

**New Haven Public Schools and  
Adam Kapor, Christopher Neilson, and Seth Zimmerman**

This Memorandum of Understanding (MOU) expresses the mutual intent of New Haven Public Schools (hereinafter the "District") and Adam Kapor of Princeton University, Christopher Neilson of Princeton University, and Seth Zimmerman of Yale University (hereinafter the "Researchers") to assist the school choice administrators in the implementation of evidence-based best practices based on prior research, and to conduct new research evaluating how school choice policies in the District affect the satisfaction and achievement of District families and students.

## Recitals

1. The District administers a comprehensive charter and magnet school choice program that aims to provide all children with access to high quality schools that fit their needs and interests.
2. In January 2019, the District and the Researchers signed an MOU delineating a collaborative partnership. During the 2019 and 2020 choice processes, the Researchers and the District worked together to implement a more transparent approach to school assignment, and to design and evaluate application assistance tools that help families better understand their choice options and placement chances. In addition, the Researchers provided funding for a data science team that assisted District leadership with the implementation of school choice programming.
3. The current document sets forward plans for future collaboration between the Researchers and the District as related to the design and implementation of choice policy.
4. In order to benefit from the experiences of other school districts and from research on best practices in school choice, and to better inform and develop future policies, the District and the Researchers enter into this agreement to:
  - a. Implement and evaluate the expansion of the Application Simulator and Feedback tool, piloted during the District's 2020 school choice process. This tool allows users to see what their admissions chances are at different schools based on data from previous years. Following the limited pilot release in 2020, the Application Simulator and Feedback tool will be made available to all starting with the 2021 process
  - b. Implement and evaluate a Virtual School Search Tool. This tool will help users explore and compare different programs offered by the District.
  - c. Implementation will take place through the Researchers' partnership with EdTech non-profit ConsiliumBots. ConsiliumBots implemented the pilot of the Application Simulator Tool in 2020.
    - i. This will be at no cost to the District.

- ii. The District will have final approval of all online materials related to the choice process.
  - d. Evaluate the effects of access to preferred schools on short- and long-run outcomes for students and their families.
  - e. Evaluate the current busing strategy to assess whether it is possible to reduce costs while maintaining the quality of transportation options or to raise quality while keeping costs stable. The goals of this analysis include:
    - i. Documenting bus transportation time for New Haven and suburban students.
    - ii. Understanding how transportation options affect school choice applications, attendance, attrition, and academic achievement.
    - iii. Understanding how changes in bus routes and stops might affect transportation time, student outcomes, and choice outcomes.
  - f. Evaluate the current socioeconomic status (SES) integration strategy implemented by the District. The researchers will work with the District to enumerate and assess possible SES integration strategies.
  - g. Evaluate application behavior of families that apply in consecutive years and produce a set of recommendations on how to avoid the mismatches that lead families to apply multiple years in a row.
  - h. Continue to provide business intelligence and data analytics support for the leadership of the district by funding an in-house data scientist at the District through the 2021 calendar year.
- 5. This MOU is intended to set forth the terms and conditions under which the District will provide information about its students to the Researchers for purposes of conducting this research, some of which constitutes "directory information" and some of which constitutes "confidential student information," as both phrases defined by Family Educational Rights and Privacy Act (hereinafter "FERPA"), 20 U.S.C. 1232g.
- 6. This MOU also sets forth the Researchers' commitments to advise the District on policy changes and aid the District in the development of the tools and expertise related to school choice outreach

**WHEREFORE, the parties agree as follows:**

- 1. The Researchers agree to implement and fund online surveys of actual and potential school choice participants. These satisfaction surveys will focus on beliefs, experiences, and preferences with respect to school choice in New Haven.
- 2. The Researchers agree to provide funding for and assistance in design of "smart marketing" and "application assistance" web tools that help families submit applications that maximize their chances of placement in a school they prefer and help families get to know more schools.
- 3. These web applications will be piloted beginning with the 2021 school choice process and funded by external grants secured by the Researchers. The implementation of each innovation is conditional on District approval in all cases.

4. To facilitate the development and implementation of web applications, development of data resources, and the completion of the research reports described in this document, the Researchers agree to fund research professionals who will be stationed inside District offices and work with District staff.
  - a. This extends the existing staffing arrangement, and will continue through the 2022 calendar year with the option for renewal at that point at mutual agreement between the Researchers and the District.
  - b. In addition to working on the research and data development tasks described in this document, the Researchers agree to provide 10 hours of research professional time per week to address ad hoc District goals for the development and maintenance of data resources. Understanding that District needs vary over the year, the allocation of research professional time to ad hoc tasks can be changed at mutual agreement of the Researchers and the District.
5. The District agrees to provide information necessary for data analysis and survey implementation to the Researchers, conditional on its existence. This specifically includes but is not limited to the data fields listed in the Appendix. In instances where data fields are time-consuming to process or obtain, the Researchers and the District agree that the Researchers will provide data science support.
6. The Researchers will ensure confidentiality of the data and comply with the Connecticut Data Privacy Act by the following:
  - a. No data from individual students will be reported in any analysis. Only aggregate summary statistics and/or regression output may be reported.
  - b. Extensive data security and confidentiality procedures will be followed, including:
    - i. All electronic data analysis will be performed on secure, password protected servers located at the Researchers' home institutions.
    - ii. Only the Researchers and approved research assistants will have access to confidential data on these servers.
    - iii. Any research assistants with access to the data will be required to sign a statement of confidentiality on file for District review.
    - iv. Confidential information will be stripped from the data as soon as it is feasible to do so by the Researchers with completion confirmed with the District.
    - v. Upon completion of the project, to be determined mutually by the District and the Researchers, the original data will be destroyed, and the Researchers will keep only a copy of analytical data needed for reproducing the analysis. Destruction of original data will be confirmed with the District.
7. The Researchers agree to share the analysis and resulting datasets with the District in advance of the results being shared with other parties and to comply with reasonable requests by the District to perform additional analyses.
8. The Researchers reserve the right to publish their analyses of the short- and long-run implications of policies related to school choice in academic journals, and to present their findings at academic seminars.

9. This agreement will become effective immediately and will continue until terminated by either party upon 10 days' notice. The Researchers will provide results of this research and aggregated data on a regular basis; however, the research project will conclude no later than July 1st, 2025, with possible option for extension. The provisions regarding confidentiality and destruction of the confidential data will survive its term as set forth in this agreement. This agreement may be amended by written amendment executed by all parties.

## Appendix

### List of data sources

- 1) Application and enrollment records
- 2) Bus route records
- 3) Student achievement records
  - a) State-level standardized tests (including SAT and PSAT exams)
  - b) National Student Clearinghouse data on college enrollment

---

## School Choice Research Partnership 2020 Progress Report

---

Adam Kapor  
*Princeton University*  
akapor@princeton.edu

Christopher Neilson  
*Princeton University*  
cneilson@princeton.edu

Seth Zimmerman  
*University of Chicago*  
seth.zimmerman@chicagobooth.edu

June 5, 2020

# Contents

<b>1</b>	<b>Summary</b>	<b>1</b>
1.1	Background . . . . .	1
1.2	Main Objectives for 2019-2020 . . . . .	1
1.3	Proposed Objectives for 2020-2021 . . . . .	2
<b>2</b>	<b>Objectives for 2019-2020</b>	<b>4</b>
2.1	Report 1: School Choice in New Haven . . . . .	4
2.2	Report 2: Evaluation of Pilots to Provide Feedback and Increase Trans- parency . . . . .	4
2.2.1	Exploring personalized application probabilities . . . . .	5
2.2.2	Providing feedback on current risky applications . . . . .	5
2.2.3	Results . . . . .	6
2.3	Report 3: Potential Errors in the Zone Address Bank . . . . .	6
<b>3</b>	<b>Additional Work done in 2019-2020</b>	<b>7</b>
<b>4</b>	<b>Proposed Objectives for 2020-2021</b>	<b>8</b>



# 1 Summary

This document and the attached reports describe the major outputs of the research partnership during the last year. The final section of this document outlines scope for further collaboration during the 2021 and 2022 Choice Processes.

## 1.1 Background

During 2015-2018 our research team and the Office of Choice and Enrollment studied how the lack of understanding and the overall complexities of the assignment system can contribute to inefficient and unequal outcomes in New Haven. In December 2018, the results were presented and a series of recommendations were proposed to the school board. These recommendations were approved and board requested the effects of the changes be documented and evaluated.

In January 2019, our research team embarked on a new collaboration documented in a Memorandum of Understanding (MOU) with NHPS to assist with the design, implementation, and evaluation of choice policies proposed through the year 2020. The collaboration had the goal to document and evaluate the change in mechanism used and to develop, implement and evaluate new ways to increase transparency and understanding among participants of the choice and enrollment process.

## 1.2 Main Objectives for 2019-2020

The MOU outlined three main objectives for the collaboration between the research team and the Office of Choice and Enrollment:

1. **Design, implement, and evaluate a change in the school assignment algorithm to simplify the choice process for applicants.**

We assisted the Office of Choice and Enrollment with a change in the *assignment algorithm* beginning with the 2019 choice process. The change brought NHPS into line with best practices in cities like New York, Chicago, and Boston, by simplifying the thought process for applicants. NHPS can now advise applicants to rank schools in the order they like them, which was previously not the case. Our evaluation suggests the district successfully conveyed the policy change to applicants.

2. **Develop, implement, and evaluate application assistance tools.**

We worked with the Office of Choice and Enrollment to develop ways to design an *Application Simulator* and email warnings system that helps choice participants understand their chances of placement at schools on their application

and automatically contacts applicants to let them know if their risk of non-placement is high. We piloted the Simulator during the 2020 choice process. Our evaluation shows warnings caused risky applicants to lengthen their applications.

### 3. Provide data science support.

We established a data science team based at the district that worked closely with the Choice and Enrollment Office. The team assisted with a variety of data analysis tasks, most of them geared towards the automation of institutional reporting, but also including ad-hoc projects, such as geocoding the school zone maps to reflect updates to the zone list since the last redistricting in 2012.

## 1.3 Proposed Objectives for 2020-2021

After consulting with leadership in the Office of Choice and Enrollment, we propose three objectives for continued partnership through 2022:

1. Continue to collaborate with NHPS to develop and evaluate ways to increase transparency and improve understanding among the community about the school choice process. To do so we propose three activities”

- **Application Simulator**

Evaluate the expansion of access and increased functionality.

- **Virtual School Search Tool**

Improve awareness of district schools by adding a *Virtual School Search Tool* to complement the *Application Simulator*.

- **Feedback Tools**

Evaluate the expansion of *Feedback Tools* that provide information to parents about current applications, including the “high risk applications alerts”.

### 2. Data Science Support

- Maintain a Data Science team at NHPS to continue to provide technical support associated with tasks related to the school choice process that are relevant for the Office of Choice and Enrollment.

### 3. Technical Public Policy Support

Continue ongoing technical analysis related to NHPS school choice policies.

- Analysis and evaluation of bussing.

- 
- Analysis of repeat applicants to the choice process.
  - Analysis of socio-economic integration.

An **exhaustive list of details** and requirements for each project will be provided through a Memorandum of Understanding document in the near future. However, more details regarding each objective can be found in section 4.

## **2 Objectives for 2019-2020**

Attached to this document are three reports describing our major policy implementation, evaluation, and technical support outputs. A brief overview is as follows.

### **2.1 Report 1: School Choice in New Haven**

The first part of this report describes the pre-2019 NHPS choice system as it relates to the policy goals of transparency and equity, as well as to the maintenance of state funding streams tied to demographic targets. We describe how the choice assignment process NHPS used in 2018 and earlier required families filling out their choice applications to make complicated strategic calculations based on detailed knowledge of their assignment chances. We present detailed data from household surveys conducted in 2015 and 2017 showing that many families have difficulty navigating the choice process and misestimate their admissions chances.

The second part of the report describes the 2019 change in assignment mechanism that we helped the Office of Choice and Enrollment implement. This change brought NHPS in line with best practices used in large districts with centralized choice, such as New York, Chicago, and Boston. Under the new mechanism, the best approach for choice applicants is to list schools in the order that they like them, which was not the case under the earlier system. Comparing email surveys conducted as part of the 2019 process to surveys from earlier years, we provide evidence that NHPS a) successfully implemented the change in the assignment process, and b) successfully conveyed to applicants how to fill out applications under the new system.

Despite the new, simplified process, results from satisfaction surveys described in this report indicate several areas for improvement. In particular, 92% of parents reported that they would like to have more information about admissions chances for the schools in their application. This suggests that informational outreach that makes admissions chances more transparent could help families do a better job filling out their applications and, even if it does not change application behavior, it could increase perceptions of fairness by helping families understand better how the process works.

### **2.2 Report 2: Evaluation of Pilots to Provide Feedback and Increase Transparency**

Results from our 2019 satisfaction survey showed that many choice participants wanted easier access to information on their chances of placement at schools on their choice application. Conveying this information in a simple way is challenging, because placement chances at a given school are not a single number. They depend on what grade a student

is in, where the school is on the application, and whether a student has sibling or neighborhood priority at the school or at higher-ranked schools on their application. In other words, the information that is relevant for each persons is very different.

### **2.2.1 Exploring personalized application probabilities**

To effectively convey the relevant information, we worked with the Office of Choice and Enrollment to design, implement, and evaluate a web-based *Application Simulator* with the help of ConsiliumBots, an EdTech NGO that specializes in technology solutions for school choice. The Application Simulator allowed choice participants to explore the application probabilities from the process in 2019. It allowed families to see the chances of admission to different schools on their choice applications had they applied the year before. Students could search over schools, create new applications, and simulate admissions chances at the new applications. All the information provided is based on seats and applications from the prior choice year, 2019. This tool is one way to increase understanding about how the system works. While it is impossible to know exactly what the chances of admission are in the future, the information for prior years might be a useful benchmark for parents to make informed decisions.

### **2.2.2 Providing feedback on current risky applications**

While exploring the application probabilities in the past can be useful, we also wanted to provide feedback to parents about the current application cycle. After a sufficient number of applications are submitted it is possible to start to identify applications that are likely to not be assign to any of the options they listed. Instead of letting the application process run its course and the majority of these parents going unassigned, we evaluated one way of providing parents feedback about how risky their application was before the process was over.

The feedback system consisted in an email to alert choice applicants at high risk of not placing in any school. We reached out to all risky applicants – those who had submitted applications with a 50% or more chance of non-placement – in major choice grades (PreK3, PreK4, Kindergarten and 9th grade) one week before the application deadline, informing them of their risk of non-placement and encouraging them consider adding additional options and to log in to the Simulator for more information. To understand the value of the simulator to applicants with lower-risk of non-placement, we sent emails to a randomly chosen subset of non-risky choice applicants as well.

### 2.2.3 Results

We find that receiving an email and access to the simulator leads risky applicants to re-visit their choice applications, adding schools and reducing their risks of non-placement. The warnings emails caused 10% of risky applicants to alter their applications, mostly by adding more schools. On average, those who changed applications submitted new applications where the risk of nonplacement was 15 percentage points lower. Non-risky applicants with simulator access were no more likely to change their applications than other applicants.

The pilot run of the Application Simulator was a success. However, its reach was (intentionally) limited. Only choice participants who submitted their applications at least one week prior to the filing deadline received emails prompting them to access the simulator. Our plan for 2021 is to expand access to all NHPS students, and to make the simulator available earlier in the choice process.

Another area we identify for improvement is the school search feature. The Application Simulator is a natural hub for school search, but search features in the pilot version were relatively limited. Our plan for 2021 is to incorporate additional search features that help families identify geographic priorities and proximity to different schools, potential eligibility for financial support at the PreK level, and other school features of interest to them.

## 2.3 Report 3: Potential Errors in the Zone Address Bank

In addition to the design, implementation, and evaluation of the assignment process change and the Application Simulator, our data science team assisted the Office of Choice and Enrollment with a variety of data tasks. One of the major projects was to geocode and map the address list of neighborhood school zones, which were originally drawn in 2012. Prior to this work there was no updated map of school zones available for parents. Currently the zones are represented by a list of addresses posted online, which is not optimal for parents to explore. After a detailed analysis of the zones, we document a variety of relatively small but noticeable changes to the list since that time, including changes in zones and addresses newly added to zones. We also identify new addresses not assigned to any zone on the list. We produce a list of suggested updates of addresses that may be misclassified and changes to the address bank currently being used. We then provide new maps and an updated address bank that is much closer to the limits determined in 2012.

Going forward, we believe these maps can be used for three purposes:

1. Transparent representation of zone boundaries in online material. These maps

could be integrated into existing NHPS websites as well as into the new Application Simulator to help residents understand the geography of school zones.

2. Classification of new addresses. Access to zone maps makes assigning new addresses to zones easier and simpler with automatic tools. One can simply ask which geographic region the address falls into, rather than trying to extrapolate from a text list of streets.
3. Possible district review of existing zones. As we document in the report, text lists of streets produce zones with non-contiguous shapes and occasional overlaps that may not be desirable.

### **3 Additional Work done in 2019-2020**

In addition to the activities documented in the three main reports, we performed a variety of data analysis tasks for the Office of Choice and Enrollment. These included:

- Automation of institutional and grant reporting.
- Active data quality control and data monitoring using automated testing routines.
- Ad-hoc data wrangling and exploratory analyses for institutional consumption.

We are happy to provide similar support going forward.

## 4 Proposed Objectives for 2020-2021

In consultation with the Office of Choice and Enrollment, we have identified the following four objectives for continuing our collaboration with NHPS through the 2021 and 2022 school choice processes:

### 1. Implement and Evaluate the Expansion of the Application Simulator.

Following the successful 2020 pilot in a limited sample of students, we will broaden access to the tool for parents to explore the application probabilities starting with the 2021 choice process. We will make the tool available earlier in the choice process, and allow more flexibility in access so that families who have not yet submitted choice applications can use it, as well as additional functionality that helps families think through their options in future choice years. The goal is to create a “one-stop-shop” that organizes choice process data in an easy-to-understand way and helps families make decisions about the choice process. We will evaluate the effects of the expansion on applicants’ choice behavior.

### 2. Implement and evaluate a virtual school search tool addition the Application Simulator.

We will expand the functionality of school search on the Application Simulator for the 2021 choice process to add more information about district schools. It will help users learn more about district schools that might be good fits for them in different ways. One way by providing a simple way for schools to share information about their school with for example i) a virtual tour of the school ii) interview with the principal, teachers and students. Another way is by identifying schools near them that are similar to those in which applicants have expressed interest and making it easy and safe for them to explore these schools. Finally, it will help users self-assess eligibility for relevant PreK programs, which can depend on income and residency.

### 3. Implement and evaluate the expansion of the Feedback Warning Tool

Following the successful 2020 pilot of the feedback efforts, we propose broadening the feedback capabilities providing an updated check in for parents before the application process is over.

### 4. Continue analysis of the policies choice impacts.

We will continue our analysis of the effects of choice policies on student outcomes and family satisfaction, providing policy guidance to the district on an as-needed basis.



- **Evaluation and report of current bussing system.**

We will collaborate with NHPS policy makers in order to evaluate the efficiency of the current bussing system. Bussing is a natural synergy to this project because the choice process determines bussing routes. Specifically we will explore the following:

- \* Whether bus routes be determined *earlier* in the process, in order to inform families in advance.
- \* Whether bus routes and/or bus stops can be reduced without a negative impact on student bussing time.
- \* Whether bus routes have an impact of racial and socio-economic segregation amongst schools.
- \* Whether transportation times affect achievement, attendance and/or choice attrition<sup>1</sup>.

- **Evaluation and report of socio-economic integration**

We will perform an in-depth preliminary analysis of SES integration across the district schools. Using the result from our analysis we will offer recommendations to the Office of Choice and Enrollment to be implemented during the 2021 process.

- **Analysis and report of families that apply in consecutive years**

The Office of Choice and Enrollment has proposed further analysis of families who are observed to apply an additional time after being placed at a school in their application on a given year.

## 5. Continue data science support for Office of Choice and Enrollment.

We will continue to staff a data science unit in the Office of Choice and Enrollment. This office supports the analyses described here and provides additional support to NHPS on an as-needed basis.

---

<sup>1</sup>We define choice attrition as an applicant that was placed in one of the choices in their application but does not show up once classes begin.